



11 Publication number: **0 512 748 A3**

12

## EUROPEAN PATENT APPLICATION

21 Application number: 92303892.1

22 Date of filing: 30.04.92

51 Int. Cl.<sup>5</sup>: H04N 9/64, H04N 9/66,  
H04N 5/60

30 Priority: 03.05.91 GB 9109617

43 Date of publication of application:  
11.11.92 Bulletin 92/48

84 Designated Contracting States:  
AT DE ES FR GB IT NL SE

88 Date of deferred publication of search report:  
14.07.93 Bulletin 93/28

71 Applicant: TEXAS INSTRUMENTS LIMITED  
Manton Lane  
Bedford MK41 7PA (GB)

72 Inventor: Ritchie, James Kenneth Alexander  
31 Lovell Road  
Bedford, MK42 0LR (GB)  
Inventor: Abbott, David  
156 Tyne Crescent  
Bedford, MK41 7YB (GB)  
Inventor: Anderson, Adrian  
Trellech Grange  
Chepstow, Gwent NG6 6QW (GB)  
Inventor: Parris, Clifford  
3 Park Glade  
Tintern, Gwent NP6 6TX (GB)

74 Representative: Abbott, David John et al  
Abel & Imray Northumberland House 303-306  
High Holborn  
London, WC1V 7LH (GB)

54 Method and apparatus for signal processing.

57 A digital demodulator for a NICAM 728 system signal has sampling and digitizing means converting the signal into a succession of digital samples. The digital samples pass through an anti-aliasing digital comb filter to a selector (decimator) that selects one sample in three and feeds it to a second digital filter. Digital matched filters for the in-phase (I) and quadrature (Q) components of the signal effect the demodulation. Carrier and symbols tracking is carried out digitally. A pulse-width modulated automatic gain control signal is produced for controlling the amplitude of the signal applied to the sampling and digitizing means.

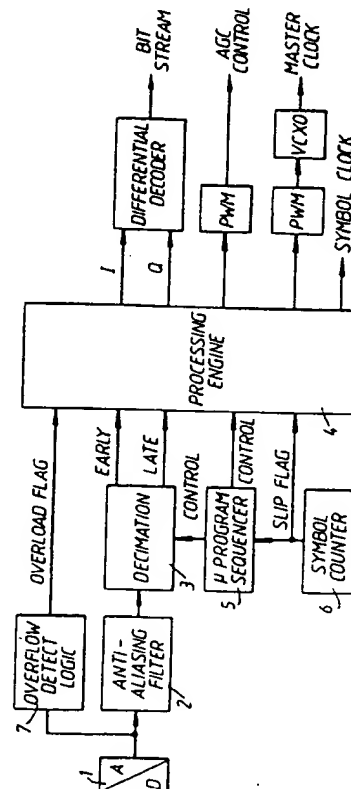


Fig.1.

EP 0 512 748 A3



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number

EP 92 30 3892  
Page 1

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	WO-A-8 904 576 (DEUTSCHE ITT INDUSTRIES GMBH) 18 May 1989	1,2,5, 8-10,13, 18,19, 22,25-29	H04N9/64 H04N9/66 H04N5/60
Y		11	
A	* the whole document *	12,14	
Y	ELEKTRONIK, vol.39, no.6, 16 March, 1990, München, DE, XP000102222, pages 50-54,56; T. HILPERT et al.: 'Digitaler Multistandard-Audio-Chipsatz'	11	
A	* the whole document *	1,12,14	
L	ELEKTOR ELECTRONICS, May, 1992, XP000290987, pages 34-38,39-42; R. KRIJGSMAN: 'NICAM decoder'	-	
A	* the whole document * [cited as reference to Micronas chip set] & MICRONAS MAS7A101 data sheet: 'NICAM QPSK demodulator', 10 September, 1990, Epsoo, FI, pages 1-10	1-14, 18-29	
A	* complete paper * & MICRONAS MAS7D102 data sheet: 'NICAM decoder', 10 September, 1990, Epsoo, FI, pages 1-17	1-14, 18-29	
A	* complete paper * & MICRONAS MAS7A103 data sheet: 'Dual 14 bit D/A converter for NICAM', 21 April, 1990, Epsoo, FI, pages 1-8	1-14, 18-29	H04N H04B H04H H04L
A	* complete paper * BBC RESEARCH DEPARTMENT REPORT, no.6, 1990, Tadworth, GB, XP000208352, pages A,B,C,1-27; A.J. BOWER: 'NICAM 728 - Digital two-channel sound for terrestrial television'	1-10, 18-29	
	* the whole document *		
	---		
	--- -/-		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 MAY 1993	Examiner HOEKSTRA A.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>Δ : member of the same patent family, corresponding document</p>			

EPO FORM 1501 (01.87) (p0401)



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number

EP 92 30 3892

Page 2

DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
A	<p>ELECTRONIC COMPONENTS and APPLICATIONS, vol.10, no.3, Eindhoven, NL, XP000288521, pages 121-127; P. DOUBLE: 'NICAM-728 two-channel digital TV sound' * the whole document *</p> <p>-----</p>	1,18
		<p>CLASSIFICATION OF THE APPLICATION (Int. Cl.5)</p>
		<p>TECHNICAL FIELDS SEARCHED (Int. Cl.5)</p>
<p>The present search report has been drawn up for all claims</p>		
Place of search	Date of completion of the search	Examiner
THE HAGUE	11 MAY 1993	HOEKSTRA A.
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document</p>		

EPO FORM 1501012 (P0601)